

IN THE CLAIMS:

- 1 1. (Previously presented) A system for managing ink information in a computer system
2 having a pen-based input tablet, the system comprising:
3 a pen driver coupled to the pen-based input/display tablet and configured to col-
4 lect and organize the ink information entered at the pen-based input tablet into ink
5 strokes;
6 an ink memory area organized into one or more ink phrase data structures; and
7 an ink manager coupled to the pen driver for receiving the ink strokes, the ink
8 manager having an ink phrase termination engine configured to examine the ink informa-
9 tion collected by the pen driver and, upon detecting the occurrence of an ink phrase ter-
10 mination event, to identify a respective end of an ink phrase to the ink manager,
11 whereby the ink information entered at the pen-based input tablet is associated
12 with a client application, and
13 the ink manager stores the ink strokes received prior to the ink phrase termination
14 event in a selected ink phrase data structure and, in response to receiving from the client
15 application a reference context affiliated with the un-recognized ink strokes of the ink
16 phrase, associates the reference context with the ink strokes.
- 1 2. (Previously presented) The system of claim 1 wherein
2 the ink manager, in response to the occurrence of an ink phrase termination event,
3 is configured to pass the un-recognized ink strokes of the respective ink phrase to the cli-
4 ent application.
- 1 3. (Canceled)

1 4. (Previously presented) The system of claim 1 wherein the ink manager associates the
2 reference context with the un-recognized ink strokes by appending the reference context
3 to the selected ink phrase data structure.

1 5. (Original) The system of claim 2 wherein the ink phrase termination engine is config-
2 ured to initiate a time-out for each ink stroke and further wherein the termination engine
3 identifies the occurrence of an ink phrase termination event when the time-out expires
4 before the next sequential ink stroke is detected.

1 6. (Original) The system of claim 5 wherein the time-out has a value that is settable by a
2 user of the computer system.

1 7. (Original) The system of claim 5 wherein the pen-based input tablet has a surface and
2 the ink information generated by the tablet includes out-of-proximity data corresponding
3 to the pen being lifted above the surface of the tablet, and further wherein the termination
4 engine detects the occurrence of an ink phrase termination event upon detecting out-of-
5 proximity data from the tablet.

1 8. (Original) The system of claim 2 further comprising:
2 one or more handwriting recognition engines for generating hypotheses based on
3 the ink information entered at the pen-based tablet; and
4 a handwriting recognition manager coupled to both the ink manager and the one
5 or more handwriting recognition engines, the handwriting recognition manager config-
6 ured and arranged to coordinate operation of the one or more handwriting recognition
7 engines, wherein
8 the ink strokes received at the ink manager are passed to the handwriting
9 recognition manager, and
10 the ink manager notifies the handwriting recognition manager of the oc-
11 currence of each ink phrase termination event and, in response, the handwriting

12 recognition manager directs a selected handwriting recognition engine to generate
13 one or more hypotheses for the ink strokes corresponding to the respective ink
14 phrase.

1 9. (Original) The system of claim 8 wherein the handwriting recognition manager in co-
2 operation with the selected handwriting recognition engine employs a word segmentation
3 model to the ink strokes as they are received by the ink manager and, in response to de-
4 termining that a given ink stroke represents a new word, is permitted to issue an ink
5 phrase termination signal to the ink manager.

1 10. (Original) The system of claim 8 wherein
2 the client application is configured to define at least one data entry field for dis-
3 play on the tablet and to establish corresponding boundary coordinates for the at least one
4 data entry field, and
5 the termination engine identifies the occurrence of an ink phrase termination
6 event when an ink stroke or portion thereof is outside of the boundary coordinates for the
7 at least one data entry field.

1 11. (Original) The system of claim 8 wherein the one or more hypotheses are provided to
2 the client application.

1 12. (Original) The system of claim 8 wherein the ink manager
2 in response to receiving from the client application a reference context affiliated
3 with the un-recognized ink strokes of the ink phrase, associates the reference context with
4 the ink strokes, and
5 in response to a request by the client application, returns the affiliated reference
6 context to the client application together with the one or more hypotheses.

1 13. (Original) The system of claim 8 wherein, in response to receiving an indication that
2 the client application has consumed the un-recognized ink strokes, the ink manager di-
3 rects the handwriting recognition manager not to generate one or more hypotheses for the
4 ink strokes.

1 14. (Original) The system of claim 8 wherein
2 in response to receiving the un-recognized ink strokes, the client application es-
3 tablishes a corresponding recognition context for the ink strokes, and
4 the handwriting recognition manager receives the recognition context and directs
5 the selected handwriting recognition engine to utilize the recognition context in generat-
6 ing the one or more hypotheses.

1 15. (Original) The system of claim 14 wherein the one or more hypotheses generated by
2 the selected handwriting recognition engine utilizing the recognition context from the cli-
3 ent application are provided to the client application.

1 16. (Currently amended) A method for managing ink information in a computer system
2 having a pen-based input tablet that may include an integrated display for generating ink
3 information as a pen is moved across the tablet, the method comprising the steps of:
4 receiving the ink information generated by the input tablet;
5 ~~identifying when the pen is lifted from the tablet so as to~~ organizing[e] the ink
6 information into corresponding ink strokes;
7 organizing the ink strokes into one or more ink phrases as defined by one or more
8 ink phrase termination events; and
9 in response to receiving a reference context from a client application affiliated
10 with the un-recognized ink strokes of the ink phrase, associating the reference context
11 with the ink strokes.

1 17. (Currently amended) The method of claim 16 wherein the step of organizing the ink
2 strokes into one or more in phrases comprises the steps of:

3 examining the ink information to determine whether an ink phrase termination
4 event has occurred; and

5 in response to the occurrence of an ink phrase termination event, segregating the
6 ink strokes received prior to the termination event in a designated ink phrase data struc-
7 ture.

1 18. (Previously presented) The method of claim 17 further comprising the step of passing
2 the un-recognized ink strokes of the respective ink phrase to the client application in re-
3 sponse to the ink phrase termination event.

1 19. (Canceled).

1 20. (Previously presented) The method of claim 17 wherein the reference context is asso-
2 ciated with the respective ink phrase by appending the reference context to the designated
3 ink phrase data structure.

1 21. (Previously presented) The method of claim 17 further comprising the steps of:
2 generating one or more recognition hypotheses for the ink strokes of the ink
3 phrase data structure; and
4 passing the one or more recognition hypotheses to the client application together
5 with the respective reference context.

1 22. (Original) The method of claim 17 wherein the ink information from the input tablet
2 further includes out-of-proximity data which corresponds to the pen being lifted above a
3 surface of the tablet, the method further comprising the steps of:
4 examining the ink information to detect out-of-proximity data;

5 identifying the occurrence of an ink phrase termination event in response to de-
6 tecting out-of-proximity data.

1 23. (Previously presented) The method of claim 17 wherein the client application defines
2 a form for display on the tablet, the form having one or more data entry fields for receiv-
3 ing handwritten information, the method further comprising the steps of:

4 receiving a set of bounding coordinates established by the client application for
5 the one or more data entry fields;

6 comparing the ink information from the input tablet with the bounding coordi-
7 nates of the one or more data entry fields; and

8 identifying the occurrence of an ink phrase termination event in response to de-
9 tecting ink information moving outside of the bounding coordinates for at least one of the
10 one or more data entry fields.

1 24. (Previously presented) The method of claim 17 wherein the computer system includes
2 at least one recognition engine, the method further comprising the steps of:

3 configuring the recognition engine to apply a word segmentation model to the ink
4 strokes as they are organized; and

5 identifying the occurrence of an ink phrase termination event when the word seg-
6 mentation model determines that a given ink stroke is part of a new word relative to an
7 immediately prior ink stroke.

1 25. (Original) The method of claim 17 further comprising the steps of:

2 initiating a time-out mechanism upon receipt of each ink data point; and

3 identifying the occurrence of an ink phrase termination event when the time-out
4 expires prior to receiving a next sequential ink data point.

1 26. (Original) The method of claim 25 wherein the ink information from the input tablet
2 further includes out-of-proximity data which corresponds to the pen being lifted above a
3 surface of the tablet, the method further comprising the steps of:
4 examining the ink information to detect out-of-proximity data;
5 identifying the occurrence of an ink phrase termination event in response to de-
6 tecting out-of-proximity data.

1 27. (Currently amended) A computer readable medium containing executable program
2 instructions for organizing ink information that is generated by a pen-based input tablet
3 as a pen moves across the tablet and is associated with a client application, the executable
4 program instructions comprising program instructions for:
5 receiving the ink information generated by the input tablet;
6 ~~identifying when the pen is lifted from the tablet so as to~~ organizing[e] the ink
7 information into corresponding ink strokes;
8 examining the ink information to determine whether an ink phrase termination
9 event has occurred;
10 in response to the occurrence of an ink phrase termination event, segregating the
11 ink strokes received prior to the termination event in a designated ink phrase data struc-
12 ture; and
13 in response to receiving a reference context from the client application affiliated
14 with the un-recognized ink strokes of the ink phrase, associating the reference context
15 with the ink strokes.

1 28. (Previously presented) The computer readable medium of claim 27 further compris-
2 ing program instructions for passing the un-recognized ink strokes of the respective ink
3 phrase to the client application in response to the ink phrase termination event.

1 29. (Original) The computer readable medium of claim 28 further comprising program
2 instructions for, in response to receiving an indication that the client application has con-
3 sumed the un-recognized ink strokes, blocking recognition of the ink strokes.

1 30. (Canceled)

1 31. (Previously presented) The computer readable medium of claim 27 wherein the refer-
2 ence context is associated with the ink strokes by appending the reference context to the
3 designated ink phrase data structure.

1 32. (Previously presented) The computer readable medium of claim 27 further compris-
2 ing program instructions for:

3 generating one or more recognition hypotheses for the ink strokes of the ink
4 phrase data structure; and

5 passing the one or more recognition hypotheses to the client application.

1 33. (Currently amended) The computer readable medium of claim 32 further comprising
2 program instructions for:

3 ~~in response to receiving a reference context from the client application affiliated~~
4 ~~with the un-recognized ink strokes of the ink phrase, associating the reference context with~~
5 ~~the ink strokes; and~~

6 in response to a request from the client application, returning the reference con-
7 text to the client application along with the one or more recognition hypotheses.

1 34. (Original) The computer readable medium of claim 32 wherein the client application
2 establishes a recognition context in response to receiving the un-recognized ink strokes of
3 the ink phrase and the program instructions from generating one or more recognition hy-
4 potheses further comprise program instructions for utilizing the recognition context estab-
5 lished by the client application.

1 35. (Original) The computer readable medium of claim 27 wherein the program instruc-
2 tions for examining comprise program instructions for:
3 initiating a time-out mechanism upon receipt of each ink data point; and
4 identifying the occurrence of an ink phrase termination event when the time-out
5 expires prior to receiving a next sequential ink data point.

1 36. (Original) The computer readable medium of claim 35 wherein the ink information
2 further includes out-of-proximity data which corresponds to the pen being lifted above a
3 surface of the tablet, and the program instructions for examining further comprise pro-
4 gram instructions for:
5 examining the ink information to detect out-of-proximity data;
6 identifying the occurrence of an ink phrase termination event in response to de-
7 tecting out-of-proximity data.

1 37. (New) A method for managing ink information in a computer system having a pen-
2 based input tablet and a display for generating ink information as a pen is moved across
3 the tablet, the method comprising:
4 organizing ink information generated at the input tablet into one or more ink
5 phrases, whereby each ink phrase is defined by an occurrence of one or more predeter-
6 mined ink phrase termination events; and
7 in response to receiving a reference context from a client application affiliated
8 with an un-recognized ink phrase, associating the reference context with the un-
9 recognized ink phrase.

1 38. (New) The method of claim 37 wherein the reference context is either a tag generated
2 by the client application for client-based identification, or a pointer to a data structure
3 containing client-related information.

- 1 39. (New) The method of claim 38 wherein the organizing ink information comprises:
2 examining the ink information to determine whether an ink phrase termination
3 event has occurred; and
4 in response to the occurrence of an ink phrase termination event, segregating the
5 ink information received prior to the termination event in a designated ink phrase data
6 structure.
- 1 40. (New) The method of claim 39 wherein the reference context is associated with the
2 respective ink phrase by appending the reference context to the designated ink phrase
3 data structure.
- 1 41. (New) The method of claim 39 further comprising:
2 generating one or more recognition hypotheses for the ink information of the ink
3 phrase data structure; and
4 passing the one or more recognition hypotheses to the client application together
5 with the respective reference context.
- 1 42. (New) A computer readable medium containing executable program instructions for
2 organizing ink information that is generated by a pen-based input tablet as a pen moves
3 across the tablet and is associated with a client application, the executable program in-
4 structions comprising program instructions for:
5 receiving the ink information generated by the input tablet;
6 examining the ink information to determine whether an ink phrase termination
7 event has occurred;
8 in response to the occurrence of an ink phrase termination event, segregating the
9 ink information received prior to the termination event in a designated ink phrase data
10 structure; and

11 in response to receiving a reference context from the client application affiliated
12 with the un-recognized ink phrase, associating the reference context with the un-
13 recognized ink phrase.

1 43. (New) The computer readable medium of claim 42 wherein the reference context is
2 either a tag generated by the client application for client-based identification, or a pointer
3 to a data structure containing client-related information.

1 44. (New) The computer readable medium of claim 43 further comprising program in-
2 structions for passing the ink information of the respective un-recognized ink phrase to
3 the client application in response to the ink phrase termination event.

1 45. (New) The computer readable medium of claim 44 further comprising program in-
2 structions for, in response to receiving an indication that the client application has con-
3 sumed the un-recognized ink phrase, declining to perform recognition of the ink informa-
4 tion.

1 46. (New) The computer readable medium of claim 42 further comprising program in-
2 structions for:
3 generating one or more recognition hypotheses for the ink information of the ink
4 phrase data structure; and
5 passing the one or more recognition hypotheses to the client application.

1 47. (New) The computer readable medium of claim 46 further comprising program in-
2 structions for in response to a request from the client application, returning the reference
3 context to the client application along with the one or more recognition hypotheses.